USER MANUAL UPS LEOPARD 10/20KVA

Publish statement

Thank you for purchasing this series UPS.
This series UPS is an intelligent, three phase in single phase out, high frequency online UPS designed by our R&D team who is with years of designing experiences on UPS.
With excellent electrical performance, perfect intelligent monitoring and network functions, smart appearance, complying with EMC and safety standards, The UPS meets the world's advanced level.
Read this manual carefully before installation
This manual provides technical support to the operator of the equipment.

Safety Instruction

1. Prohibition

1.1 There is a high risk of electric shock from the UPS inside, so please do not open or remove the casing or front panel unless it is operated by authorized technicians; otherwise, the warranty becomes void as well.

1.2 Please contact and discuss with distributors before connecting the UPS to following equipments

- Medical equipments which have direct relationship with patients' life
- Equipments like elevators which may do harm to human beings
- Similar equipments as mentioned above

1.3 Don't dispose of the battery with fire so as to avoid explosion

2. Safety notice

1) The output of standard UPS with internal batteries may be energized even if the UPS input is not connected to the utility.
2) Do disconnect the UPS input and make sure the UPS is completely off before moving the UPS or re-configured the connection; otherwise, there will be potential electric shock.
3) For the sake of human being' safety, please well earth the UPS before starting it.
4) Working environment and storage way will affect the lifetime and reliability of the UPS. Avoid having the UPS work under following environment for a long time
   - Area where the humidity and temperature is beyond the specified

range(temperature from 0□ to 40□, relative humidity 5%-95%).

- Direct sunlight and location nearby heat
- Area which can be crashed easily
- Area with corrosive gas, flammable gas, excessive dust...etc.

5) Keep the ventilations in good conditions otherwise the temperature of components inside UPS will be high and the component and UPS life will be affected.

6) It is forbidden to pour liquid or put any objects into the UPS.

7) Don't use liquid extinguisher if there is a fire, a dry powder extinguisher is recommended.

8) Battery life cycle will be shorter as environment temperature rise. Replacing battery periodically can help to keep the UPS in normal status and assure backup time required. Battery replacement should be done by authorized technician.

9) Keep the UPS in a dry area or environment if it will not be free of operation for a long time. Storage temperature of UPS with internal battery is -20□~+55□,and extended backup model without internal battery is -40□~+70□.

10) Taking out the UPS or batteries from storage, it is recommended to connect them with the utility for at least 12 hours per 3 months to avoid battery from over-draining.

11) Don't open the battery, electrolyte inside will do harm to eyes and skin. Please use plenty of clean water to wash if touching then go to see a doctor.

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1. Production Introduction

1.1 Application

This series UPS, providing reliable AC power to various equipment, can be used for computer center, network management center, auto control system, telecom systems, etc.

1.2 Product range

This series contains many capacities of UPS products.

The UPS models and configuration of 10 k (H/S); 15 k (H); 20 k (H) are as follows.

Capacity	10kVA		15kVA	20kVA
Model	10k(S)	10k(H)	15k(H)	20k(H)
Remarks	Standard model, with internal battery	Extended model, External battery	Extended model, External battery	Extended model, External battery

1.3 System principle diagram

The system can work as a single unit or parallel one, so as to enhance its reliability.

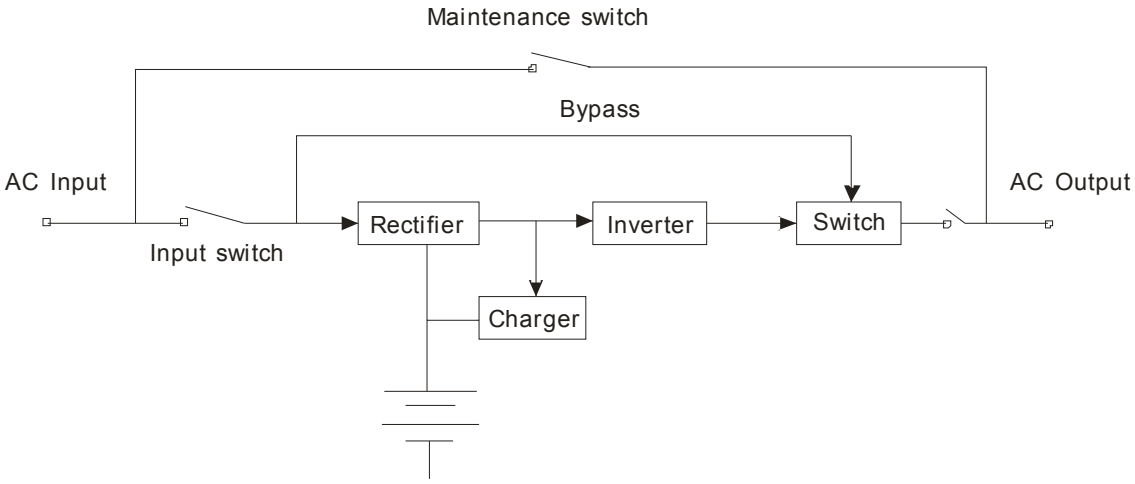


Fig.1-3 1 Single unit

1.4 Features

This series is newly introduced. It is an intelligent online sine wave UPS.

- High frequency, double conversion, high input power factor, wide input voltage range, the output will not be disturbed by power network, suitable for area with poor power supply condition
- DSP technology for all-digital control, high reliability, self-diagnostics and protections are featured
- Intelligent battery management which extends battery life
- LCD panel and LED indicators clearly indicate the system status and parameters such as input/output voltage, frequency, load, temperature inside UPS, etc.
- Perfect network power management can be achieved by using UPS monitoring software
- Maintenance bypass switch is provided so the power supply to load will not be interrupted during repair

1.5 Product overview

1.5.1 Product view

Fig. 1-5 1 Complete unit view

1.5.2 Rear panel instruction

1.5.2.1 10/15/20k(H) Rear panel

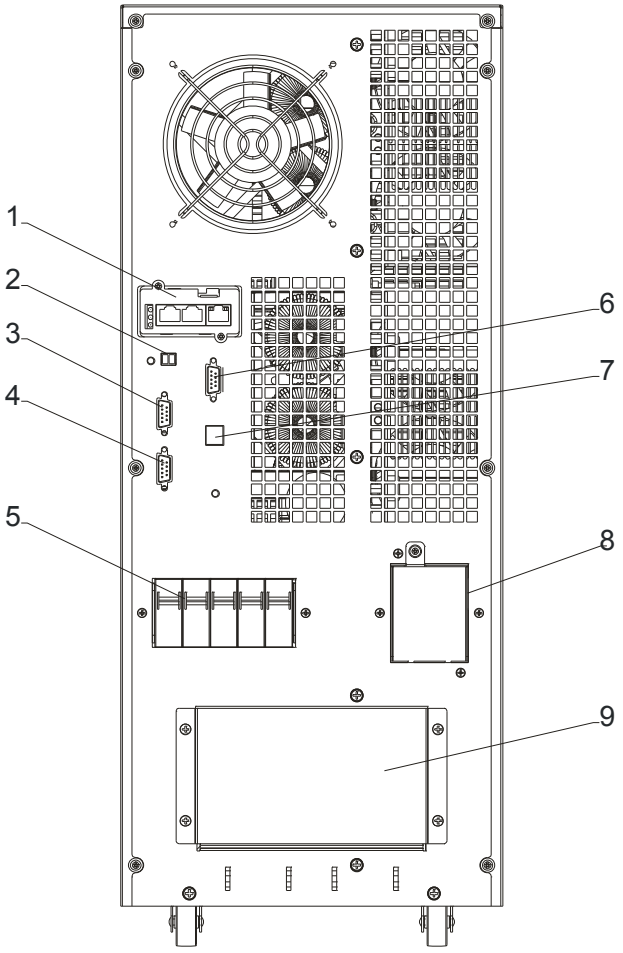


Fig.1-5 2a 10/15/20 k (H) Rear Instruction

1) Intelligent slot
2) EPO
3) Parallel port 1
4) Parallel port 2

5) Input & output breaker
6) COM
7) USB
8) Maintenance bypass switch (covered)
9） Terminals (covered)

1.5.2.2 10k（S） rear panel

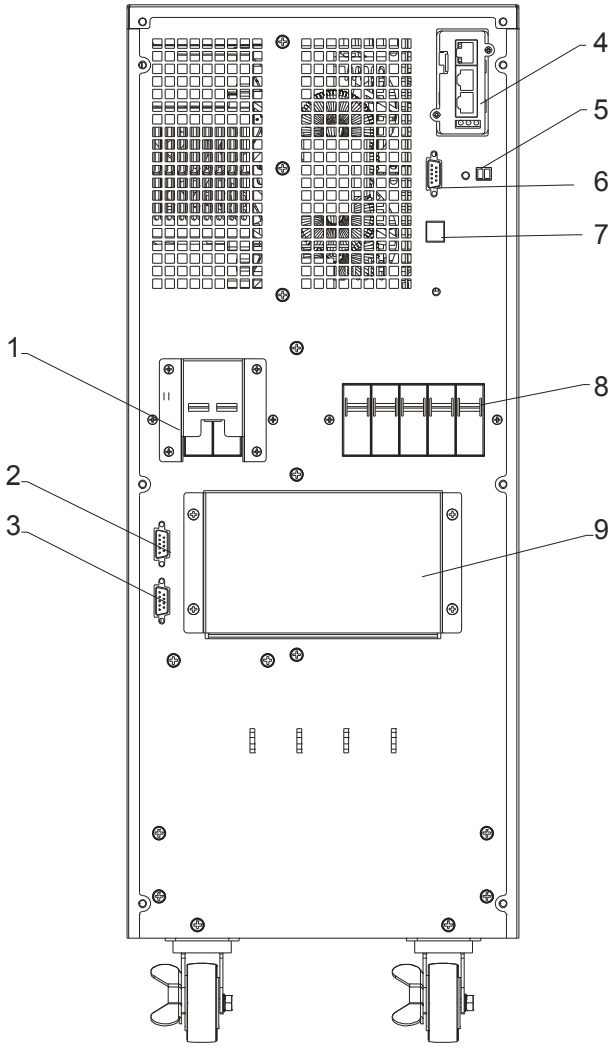


Fig.1-5 2b 10K(S) Rear Instruction

1) Maintenance bypass switch
2) Parallel port 1
3) Parallel port 2

4) Intelligent slot
5) EPO
6) COM
7) USB
8) Input & output breaker
9) Terminals (covered)

2. Installation

2.1 Unpack checking

1) Don’t lean the UPS when moving it out from the packaging.
2) Check the appearance to see if the UPS is damaged during transportation, do not switch on the UPS if any damaged is found and please contact the dealer.
3) Check the accessories according to the packing list and contact the dealer if any parts missing.

2.2 Installation procedure

2.2.1 Installation note

* Put the UPS at flat place next to the equipment.
* Keep the UPS at least 20cm from wall or equipment or other object. Don’t block the ventilation holes of the UPS located in the front panel and the bottom part, so as to keep the ventilation in good condition & avoid temperature of components inside getting high.
* Keep the UPS away from high temperature, water, flammable gas, corrosive gas, dust, direct sunlight and explosive things
* Don't lay the UPS outdoor.
* 3P 125A/400V circuit breaker is required at the input and battery and 2P 125A/400V is required at the output.
* PDU is required to connect to the UPS output so as to weaken the affection between loads
* In order to fix the UPS, please lock its wheels by shifting the sheet on each wheel.
* RCD load like computer, linear load and small inductive load can be connected with the UPS. Please contact dealer if other types of loads is required to be

connected with.

* For the safety sake of user and equipments, please betake correct power configuration.

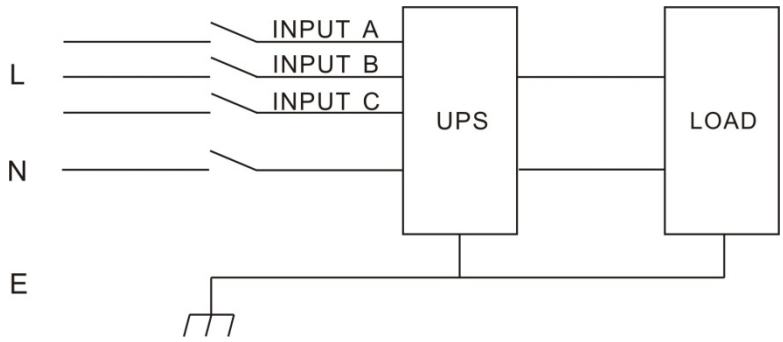


Fig.2-1 Correct power configuration

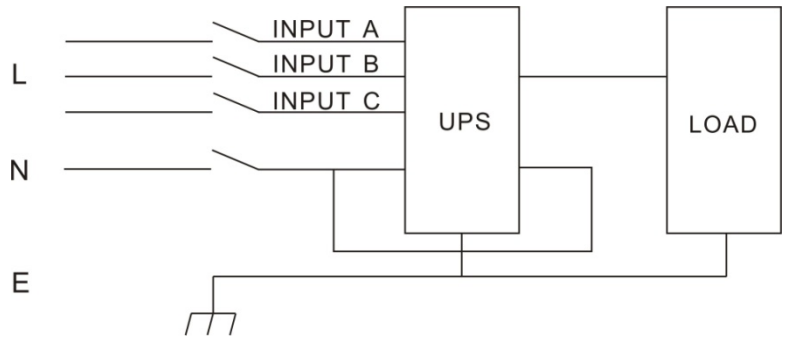


FIg.2-2 Wrong power configuration

2.2.2 Installation

2.2.2.1 External battery connection (for extended model only)

1) Make sure battery quantity complies with the specs（16 to 20 pieces of 12V battery in series）. Measure the voltage of battery bank after finishing connection.

> **CAUTION!**
> Don't mix batteries with different capacity & brands and don't mix brand new and old batteries, either.

2) The breaker on battery cabinet should be off.
3) Take out the connection box and remove the cover of terminals, use multi-meter to make sure there is no DC voltage at the battery terminals of UPS.
4) Connect battery pole with positive pole, common pole and negative pole to battery connector (BAT+,BATN,BAT-）, don't reverse battery connection.

> **CAUTION!**

It is recommended to connect or replace battery after switching off the system; don’t reverse battery polarity when doing battery hot-swapping.

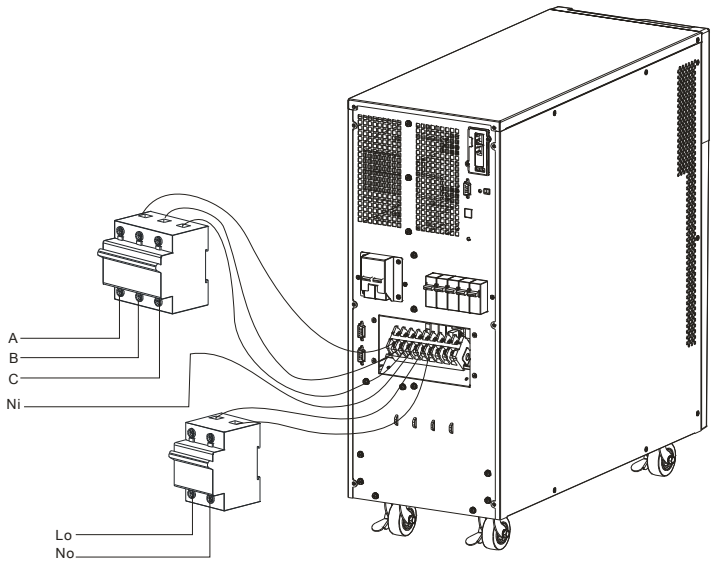


Fig.2-3a 10k(S) External battery connection

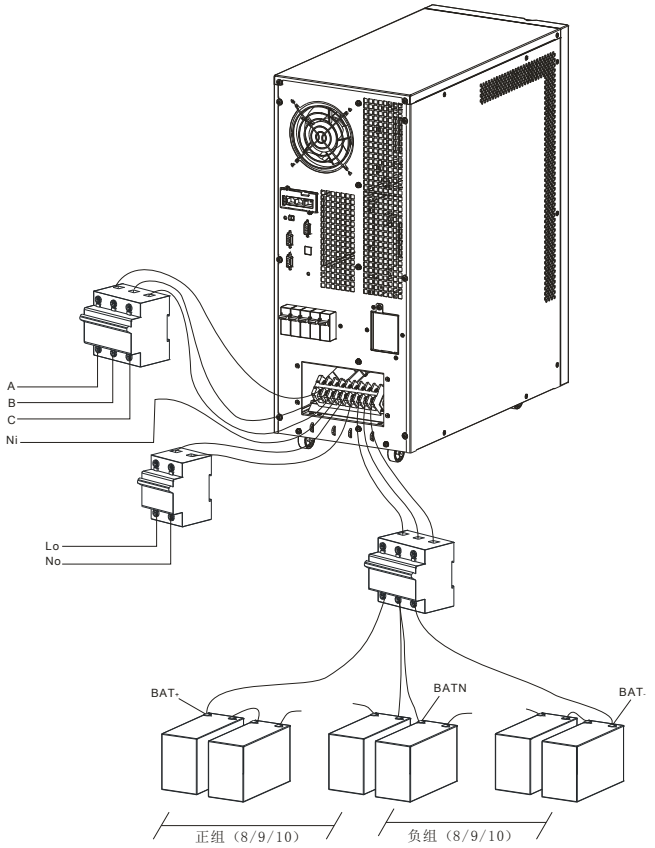


Fig.2-3b 10k/15k/20k(H) External battery connection

2.2.2.2 UPS input and output connection

Minimum 8AWG or 10 mm2 copper wires for input/output & battery cables are required for the ups.

1) Switch off all breakers before connecting cables.
2) Remove the cover of the terminals, see Fig 2-4, and connect the cables correspondingly

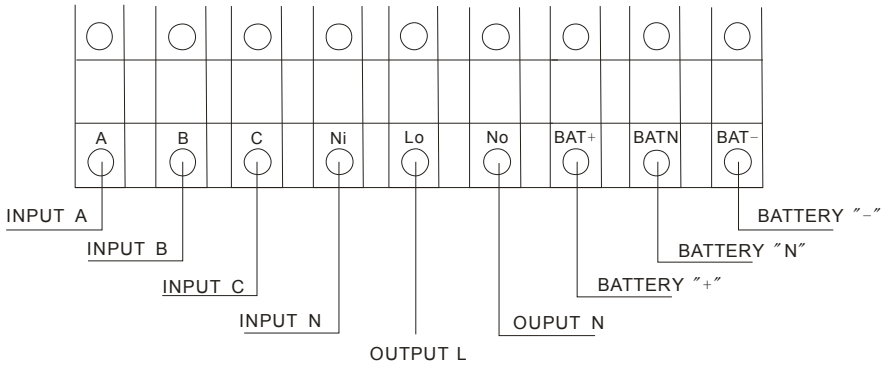


Fig. 2-4a 10k/15k/20k I/O terminals connection

CAUTION!
Terminators are required so as to ensure the connections are firm
Don't reverse the input L and N
Don't connect the UPS input to a wall outlet or the outlet will get burnt.

3) Connect the UPS output L, N, E to L, N, E of load via a PDU. Tighten the screws and shelter the terminals

CAUTION!
Please connect the output Earth well before go for other operation

2.2.2.3 Connection of the UPS communication cables

1) USB cable provided in accessories can be used to connect the UPS with PC
2) Follow steps below to install SNMP (if purchased):
   A. Remove the cover of SNMP slot at UPS rear panel and keep it for further use.
   B. Insert the SNMP card and tighten the screws
   C. Connect the UPS with internet by network cable.
   D. Refer to the SNMP manual provided to do SNMP setting.

2.3 Connection of parallel system

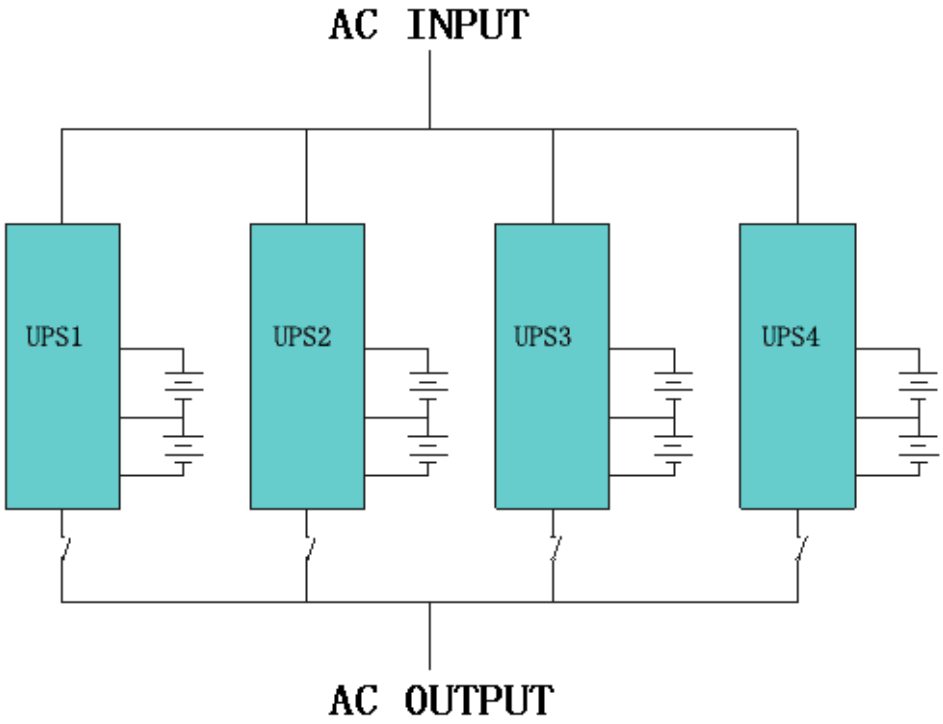


Fig.2-5 parallel system

Make sure all the breakers are off and no output at the UPS output.

CAUTION!
Connect the A/B/C/N/L and E well

Wire for requirement:
For 10KVA UPS, select 10AWG or 6mm² I/O copper line. The total line length is N*6mm².
For 15KVA UPS, select 8AWG or 10mm² I/O copper line. The total line length is N*10mm².
For 20KVA UPS, select 6AWG or 16mm² I/O copper line. The total line length is N*16mm².
(N equals the numbers of the UPS in parallel.)

3. Operation

3.1 Working modes

The UPS has AC mode, bypass mode, battery mode and ECO mode

3.1.1 AC mode

If the AC input and load capacity are in normal ranges, the load will be powered by inverter output, battery will be charged at the same time. AC and inverter indicators on LCD control panel will be on (green).

CAUTION!

Please note below if the UPS input power is provided by a generator.

1) Don't switch on the loads before starting UPS. After the UPS has been started and worked steadily, switch on the loads one by one. Suggest that the total capacity of the loads should be lower than 30% of capacity of the generator.

2) It is suggested that the rating of generator should be 1.5-2 times of the capacity of the UPS.

3.1.2 Bypass mode

When the AC power is connected and the UPS has not been switched on, or the UPS is overloaded after switching on the UPS, it will go to bypass mode. The Loads will be powered by AC, battery will be charged, and the bypass indicator on the LCD control panel will be on (yellow). But, if the bypass is beyond normal range or absent, the UPS will not go to bypass mode and no power will be supplied to the loads.

3.1.3 Battery mode

In AC mode, if the AC is absent or beyond normal range, the rectifier and charger will stop working, the loads will be powered by battery bank of which energy goes through inverter circuit. The Inverter's and battery's indicators on LCD control panel will be on (green) and the alarm will beep every 2 seconds.

In battery mode, if the battery voltage becomes low and reaches the setting value, the system will give low battery voltage alarm, beep once every second and the LCD will give low battery alarm, too.

CAUTION!

Charge batteries for at least 8 hours when the UPS is used at the first time, as battery has self-discharge characteristics even though the UPS has been fully charged by manufacturer before shipping.

3.1.4 ECO mode

In AC mode, the UPS can be set to work in ECO mode if the load does require strict power purity and it can be sustained in bypass mode normally. If the AC is beyond normal range, the UPS will transfer back to inverter mode. The Efficiency for the UPS in ECO mode is much higher.

3.2 Panel display, operation and running

The operation is simple, operators only need to read the manual and follow the operation instructions listed in this manual, no need any special training.3.2.1 Start up and turn off the UPS

- **Start up operation**

1、Turn on the UPS in Line mode

Once AC Power Cord is plugged in, the UPS will start automatically and the LCD display of the UPS will be lit on. You may view the data and set parameters on the LCD display as well as the LED display showing the status of the UPS.

2、Turn on the UPS in Battery Mode

Press “On” on the front panel to start the UPS and in the meantime, the LCD display will light up. You may view the data and set parameters on the LCD display and the LED display of the UPS will show the latest status of the UPS.

- **Turn off operation**

1、Turn off the UPS in line mode（without batteries）

① Press and hold the OFF key for 2 seconds to turn off the inverter and the UPS is in Bypass mode now; on the contrary, you may press the hold the OFF key for 2 seconds in order to Change over back to inverter mode.

② To shut down (turn off) the UPS completely, you need to turn off the input switch.

2、Turn off the UPS with connecting batteries

- Press and hold the OFF key for 2 seconds to turn off the UPS.
- After UPS is turned off, all LED and LCD will be extinguished and there is no output.

Remarks: When the UPS is turned off from the inverter mode, it will discharge DC Bus and then shut down completely; therefore, sometimes, it takes more several seconds to complete.

3.2.2 Faceplate display

- **Faceplate display illumination**

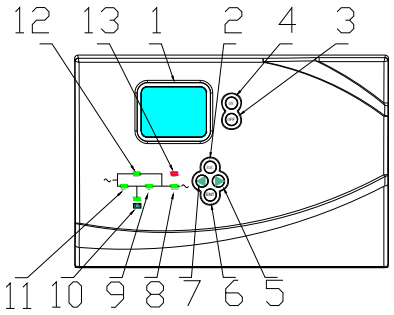


Fig.3.2.2a Overview of the operating panel of the UPS

1. LCD Display Board
2. ESC
3. Off button
4. On button
5. right or down
6. Enter
7. left or up
8. Output Indicator
9. Inverter Indicator
10. Battery Indicator
11. Mains (AC) Indicator
12. Bypass Indicator
13. Fault Indicator

- **LCD display**

1、LED indicator definition

1) Fault Indicator（red）：”On “ indicates when a fault occurred; “Off” means no fault occurred.
2) Indicator（Green）：”On” means AC is normal, “Off” means AC is not present, and blinking means voltage is beyond normal range
3) Inverter Indicator（Green）：”On” means when load is powered by inverter, “Off” means when it is not working and blinking means it is in overload condition.
4) Bypass Indicator（Green）：”On” means when UPS is in bypass mode, “Off” means not in bypass mode and blinking means when the input is beyond normal range
5) Battery Indicator（Green）：On: when UPS is in battery mode, Off : Not in Battery mode; Blinking: when battery voltage is low or battery is not connected
6) Output Indicator（Green）：On: when there is output, Off: no output.

2、LCD display content

1) Running parameters
   Input voltage/frequency, output voltage/frequency/current, temperature inside UPS, battery remaining capacity, battery charging/fully charged, battery voltage.

2） Alarm information (priority from high to low)
   It provides shutting down, auxiliary power fault, output short circuit, inverter fault, rectifier fault, over temperature, overload, charger fault, battery fault, battery capacity low, ready to shut down and output fault.

3） Parameter setting
   Menu setting, floating /boosting charging setting, battery capacity setting, ID of parallel UPS, output voltage/frequency level/calibration.

3） Boosting charging voltage 2.30 to 2.35V per cell, floating charging voltage 2.20 to 2.29V per cell

4） Battery capacity setting includes the Ah of each battery unit, battery quantity (8 to 10)*2, parallel group number, low battery voltage alarm value (EOD).

5） Parallel setting

6） UPS ID setting

7） LBS setting (Enable/Disable, Master/Slave)

a) Button Definition

Button	Definition
ON	Switch on the inverter by pressing and holding it for 1s when the UPS is off
OFF	Switch off the inverter output by pressing and holding it for 1s when the UPS is on, load will be powered by bypass output if the bypass is normal
ENT	Confirm the operation
ESC	cancel and go to previous menu
	Turn to another menu or parameter
	Turn to another menu or parameter

5) UPS Messages reference table

Explanation	**Content**
Initialization	CurState: Init
No export	No-Out
At bypass	Bypass
Rectifier working	Mains
Battery mode	Battery
Battery testing	Testing
Starting	Starting
ECO mode	CurState : ECO
EPO mode	CurState: EPO
UPS maintaining	CurState: M-Byp
UPS fault	CurState:Fault
Battery float charging	Battery Charging
Battery Boost charging	Battery Boost
Inverter on/off	Invter ON/ Invter OFF
Master of UPS	Inver Master
Maintenance switch close or open	SWMB ON/ SWMB OFF

3.2.3 Display instruction

1) The main interface below comes out when the power is connected or the system is cold start.See Fig1

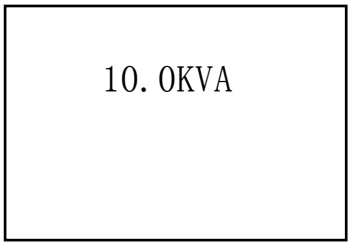


Fig.1：Main interface

2) Press ESC/ □ or □ button, it will change to the basic status interface , see Fig2 below

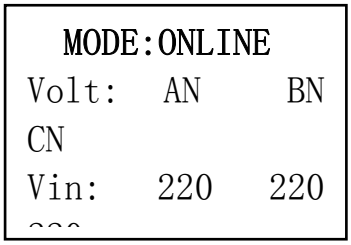


Fig.2：Basic status interface

3) Press the ENT button, it will change to main menu, see Fig3,

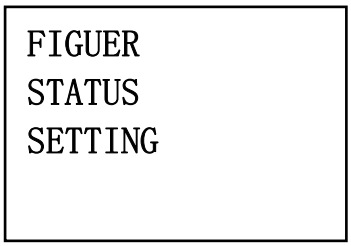


Fig.3： Main menu

4) An arrow icon will come out on the LCD when pressing the ENT, then the data info, status info, setting info can be selected by pressing the right or left arrow button, and checking the details by pressing
5) Select and confirm the data info to be viewed in detail. It contains the details of the AC input /output , inverter, battery , BUS, parallel , temperature. See Fig 4 to 13 below.

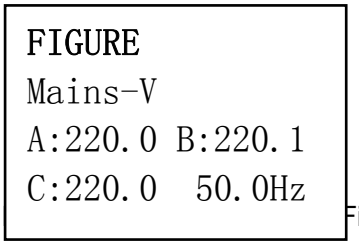
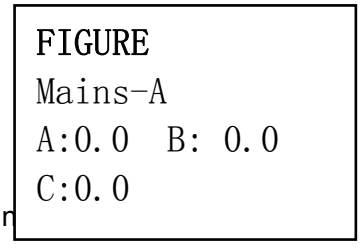


Fig.5:In



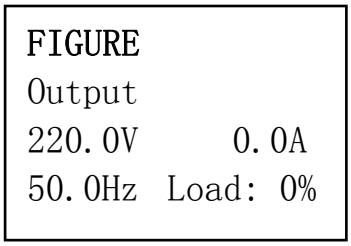


Fig.6：Output info

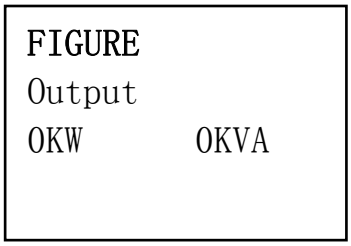


Fig.7：Output info

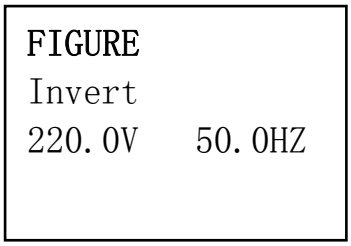


Fig.8：Inverter info

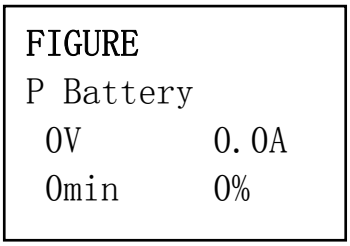


Fig.8：Battery info

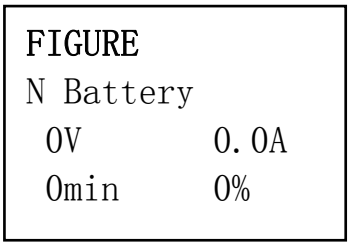


Fig.10 Battery info

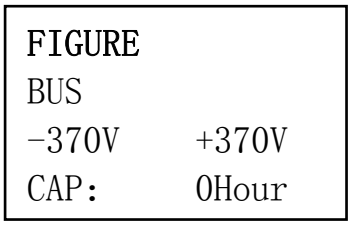


Fig.11：Bus info

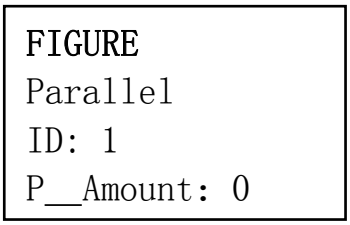


Fig.12：Parallel info

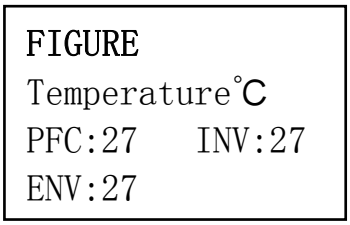


Fig.13：Temperature info

6) Select and confirm the status info can view the details, including status information, alarm information, code, power rating and version. See Fig 14 to 15

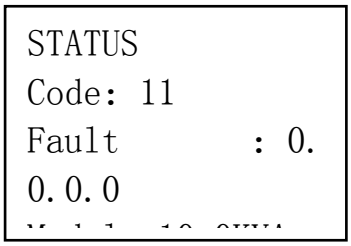


Fig.14：main menu

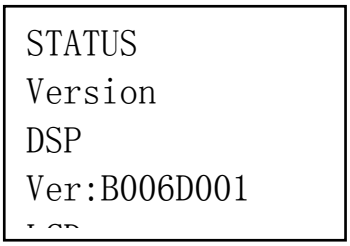


Fig.15：main menu

7) Select and confirm setting menu, setting information will be displayed on the screen, which includes user set, system set, parallel set, battery sett, revise set. See Fig 16 to 20

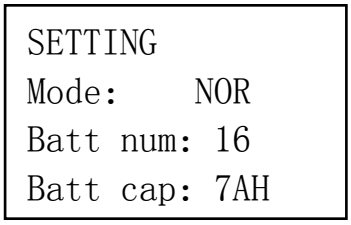


Fig.16：setting menu

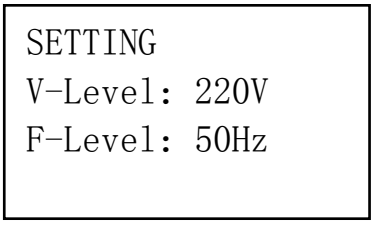


Fig.17：setting menu

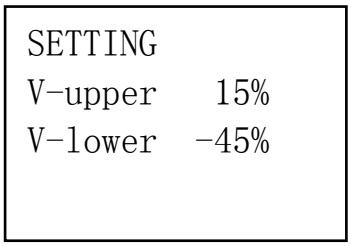


Fig.18：setting menu

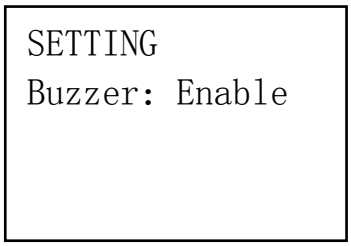


Fig.19：setting menu

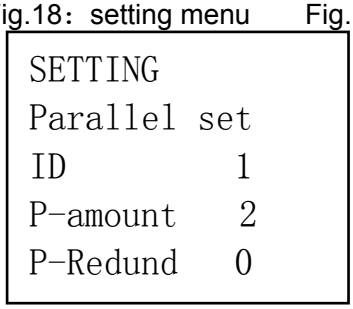


Fig.20：Parallel setting

3.3 Working Mode and transferring

Usually, the UPS should be set to work in AC mode, so it will transfer to battery mode automatically without interruption when AC fails. When the UPS is overloaded, it will transfer to bypass mode without interruption. When the inverter is defective or over temperature occurred inside the UPS, the UPS will transfer to bypass mode if the bypass is normal.

3.3.1 Transfer to bypass if overload

When the load of UPS is beyond normal range and lasts for the time set, it will transfer to bypass mode and beeps twice every second, then the load is powered by AC directly. Please decrease the load immediately until the alarm is eliminated. The UPS will start the inverter after 5 minutes. In order to protect the load and the UPS, it is required to set the limitation times of transferring to bypass mode due to overload in 1 hour. If it exceeds the limitation times set, the UPS will keep in bypass mode.

3.3.2 Normal mode to battery mode

The UPS will go to battery mode if the AC is failed. The UPS will shut down automatically if batteries are drained. When AC recovers, the UPS will start the inverter automatically.

3.3.3 Go to bypass mode due to over temperature

The temperature inside UPS may be high if ambient temperature is high or the ventilation is poor, then the UPS will go to Bypass mode, fault indicator will be on (red), the LCD will display that the inner temperature is high, long beeps will come. If so, please cut off the input power of the UPS, move objects that affecting the ventilation far from the UPS if any or increase the distance between the UPS and the wall. Wait until the UPS temperature becomes normal then restart it.

3.3.4 Output short circuit

When the UPS output is in short circuit, the UPS will cut off the output, fault indictor will be on (red), the LCD will display output is in short circuit, long beeps come. If so, please disconnect the load in short circuit, cut off the UPS input power and wait for 10mins, the UPS will shut down automatically or press the off button to shut down in after10s. Before restarting the UPS, please make sure that the short circuit problem has been solved.

3.4 UPS monitoring

Please refer to the instruction of the UPS monitoring software provided.

3.5 Display Messages/ Records

This section lists the event and alarm messages that the UPS might display. The messages are listed in alphabetical order. This section is listed with each alarm message to help you troubleshoot problems .

3.5.1 **Operational Status and Mode(s)**

item	Content Displayed	LED			
		Fault	Bypass	Battery	Inverter
1	Initialized	EXTINGUISH	EXTINGUISH	EXTINGUISH	EXTINGUISH
2	Standby Mode	EXTINGUISH	EXTINGUISH	X	EXTINGUISH
3	No Output	EXTINGUISH	EXTINGUISH	X	EXTINGUISH
4	Bypass Mode	EXTINGUISH	LIGHT	X	EXTINGUISH
5	Utility Mode	EXTINGUISH	EXTINGUISH	X	LIGHT
6	Battery Mode	EXTINGUISH	EXTINGUISH	LIGHT	EXTINGUISH
7	Battery Self-diagnostics	EXTINGUISH	EXTINGUISH	LIGHT	EXTINGUISH
8	Inverter is starting up	EXTINGUISH	X	X	EXTINGUISH
9	ECO Mode	EXTINGUISH	X	X	X
10	EPO Mode	LIGHT	EXTINGUISH	X	EXTINGUISH
11	Maintenance Bypass Mode	EXTINGUISH	EXTINGUISH	EXTINGUISH	EXTINGUISH
12	Fault Mode	LIGHT	X	X	X

Note： “X” shows that it will determined by other conditions.

3.5.2 Alarm Information

Item	UPS Alarm Warning	Buzz	LED
1	Rectifier Fault	Beep continuously	Fault LED lit
2	Inverter fault	Beep continuously	Fault LED lit
3	Inverter Thyristor short	Beep continuously	Fault LED lit
4	Inverter Thyristor broken	Beep continuously	Fault LED lit
5	Bypass Thyristor short	Beep continuously	Fault LED lit
6	Bypass Thyristor broken	Beep continuously	Fault LED lit
7	Fuse broken (Reserved)	Beep continuously	Fault LED lit
8	Parallel relay fault	Beep continuously	Fault LED lit
9	Fan fault	Beep continuously	Fault LED lit
10	Reserved	Beep continuously	Fault LED lit
11	Auxiliary power fault	Beep continuously	Fault LED lit
12	Initialization fault	Beep continuously	Fault LED lit
13	P-Battery Charger fault	Beep continuously	Fault LED lit
14	N-Battery Charger fault	Beep continuously	Fault LED lit
15	DC Bus over voltage	Beep continuously	Fault LED lit
16	DC Bus below voltage	Beep continuously	Fault LED lit
17	DC bus unbalance	Beep continuously	Fault LED lit
18	Soft start failed	Beep continuously	Fault LED lit
19	Rectifier Over Temperature	Twice per second	Fault LED lit
20	Inverter Over temperature	Twice per second	Fault LED lit
21	Input N loss	Twice per second	Fault LED lit
22	Battery reverse	Twice per second	Fault LED lit
23	Cable connection error	Twice per second	Fault LED lit
24	CAN comm. Fault	Twice per second	Fault LED lit
25	Parallel load sharing fault	Twice per second	Fault LED lit
26	Battery over voltage	Once per second	Fault LED blinking

Item	UPS Alarm Warning	Buzz	LED
27	Mains volt. reverse (Reserved)	Once per second	Fault LED blinking
28	Bypass reverse (Reserved)	Once per second	Fault LED blinking
29	Output Short-circuit	Once per second	Fault LED blinking
30	Rectifier over current	Once per second	Fault LED blinking
31	Bypass over current	Once per second	BPS LED blinking
32	Overload	Once per second	INV or BPS blinking
33	No battery	Once per second	BATTERY blinking
34	Battery under voltage	Once per second	BATTERY blinking
35	Battery low pre-warning	Once per second	BATTERY blinking
36	Internal Communication Error	Once per second	Bypass LED lit
37	DC component over limit.	Once per 2 seconds	INV blinking
38	Parallel Overload	Once per 2 seconds	INV blinking
39	Mains volt. Abnormal	Once per 2 seconds	BATTERY LED lit
40	Mains freq. abnormal	Once per 2 seconds	BATTERY LED lit
41	Bypass Not Available		BPS blinking
42	Bypass unable to trace		BPS blinking
43	Boot is invalid		

4. Specification

Product Performance

CAPACITY		10kVA/9KW、15kVA/13.5KW、20kVA/18KW　PF:0.9
MODEL		10K(S/H)/15K(H)/20K(H)
AC INPUT	INPUT	3 phase 5 wires
	Input power factor	≥ 0.99
	Rated voltage	220VAC/230/240VAC（self-adaption）
	Rated frequency	50Hz/60Hz（settable）
	Voltage range	208~478V
	Frequency range	45~55Hz（50 Hz）；55~65Hz（60 Hz）
	Bypass voltage range	Max： 220V,+25%(+10%,+15%,+20%, optional) 230V,+20%(+10%,+15%,, optional) 240V,+15%(+10%, , optional)
		Min： -45%(-20%, -30%,, optional)
	Bypass frequency range	±1%、±2%、±4%、±5%、±10%
DC INPUT	Battery number	16/18/20 pieces
	Battery type	VRLA
	Charge model	Boost charge or float charge auto switch
	Charge time	Boost charge up to 20 hour (Max)
	Charge current (MAX.)	1A（S）/10A（H）
AC OUTPUT	Output type	1 phase 3 wires
	Voltage regulation	±1.0%
	Voltage distortion(THD)	less than 2% at 100% liner load
		less than 5% at 100% non-liner load
	Output voltage class	220/230/240V±1%
	Frequency regulation	±0.1% (single machine)
		±0.25% (parallel operation)
	Frequency	50/60±0.1Hz【Utility Mode：tracking A phase frequency，＞±10%（±1%、±2、±4%、±5%）】
		50Hz/60±0.1Hz【Battery Mode】
	Frequency track speed	1Hz/s (single machine)
		0.5Hz/s (parallel operation)
	load capacity （Mains, drop a level in battery mode）	≤110%，lasts 1 hour ≤125%,lasts 10 minutes ≤150%, lasts 1 minute ＞150%，switch to bypass
	load capacity	＞95%, can not inverter-fed

		Load for a long time when rated output current under 125%
		Bypass load capacity is controlled by bypass circuit breaker, tripping when circuit breaker operating current.
	Crest factor	3:1
	Efficiency at AC	10K:≥90% 15K/20K：≥92%
	Dynamic respond	5.0%
	Dynamic respond	40ms
	output voltage DC component	≤100mV
Transfer time	Between Normal and battery mode	0ms
	Between inverter and bypass	0ms(synchronous)
		＜15ms (50Hz), ＜13.33ms (60Hz) (asynchronous)
Noise		<55dB（1m）
Display		LCD+LED
Safety		Meet up with STANDARD IEC62040-1
Max input voltage		320Vac，1 hour（static）
EMI		Conduction：IEC 62040-2
		Radiation：IEC 62040-2
		Harmonics：IEC 62040-2
EMS		IEC 62040-2
MTBF		250,000 hours
Isolation resistance		> 2MΩ（500Vdc）
Isolation intension		2820Vdc，<3.5mA，1min
Surge		Meeting up with IEC60664-1,1.2/50uS+8/20uS, composite wave ability ≥ 6kV/3kA.
Protection		IP20

Dimension and weight

Mechanical Characteristics			
Rated power	kVA	10kVA(S)	10kVA/15kVA/20kVA(H)
Height	mm	655	616
Width	mm	250	250
Depth	mm	597	502
N.W.	kg	76	10kVA:35,15/20kVA:45
Color		Black	

5. Maintenance

Please follow 2.2.1 to install the UPS

5.1 Fan maintenance

Continual working time of fan is 20000 to 40000 hours. It will be shorter as temperature raises. Please check the fan periodically, make sure there is wind blowing out from it.

5.2 Battery maintenance

There are sealed lead acid maintenance free batteries inside this series standard models. Battery life depends on environment temperature and discharge/charge cycles, it will be shortened if temperature raised or deep discharged. Periodical maintenance is required so as to keep battery in good condition.

1) The most proper working temperature is 15 to 25 Celsius degree.
2) Avoid small discharging current. Don't let UPS work in battery mode continuously for 24 hours.
3) Charge battery for at least 12 hours every 3 months if it is free of operation. If the environment temperature is high, charge it once every 2 months.
4) For extended backup models, check and clean the battery connectors periodically.。

If backup time has become much less than before, or there is battery fault displayed on the LCD, please contact distributors to confirm whether the batteries are needed to be replaced or not.

CAUTION：

★Before replacing batteries, first please turn off the UPS and break off the mains. Remove your metallic adornment such as finger ring, watch and so on.

★When replace batteries, please use the screwdriver with insulating handle. Do not lay the tools or metallic goods on the battery.

★Never reverse or short circuit between the battery anode and cathode.

5.3 Visual checking

1) Clean your UPS regularly, especially intake and exhaust vents to Keep ventilation of the UPS in good condition. Use a vacuum cleaner to clean up when necessary.

2) Check nothing blocks the ventilation of the front ,rear and side panel and the

case bottom.

5.4 UPS status checking

1) Check to see if there is any fault occurred, fault indictor is on or any alarm there.
2) Please find the cause if the UPS is working in bypass mode.
3) If the UPS is working in battery mode, make sure it is normal; on the contrary, please find out the root cause, such as Utility Failure or self-check of battery.

6. Trouble shooting

When your UPS has the abnormal situation ,please refer to the below table for checking and troubleshooting first.

Please contact the distributor if problems can not be solved by the trouble shooting below

No.	Problem description	Probable causes	Solution
1	No display on the LCD, no self-diagnostics	A Input power absent B Low input	Use Multi-meter to measure the input to see if it is normal or not.
2	AC normal but AC indicator off, the UPS is in battery mode	A Input circuit breaker off. B Input power connection problem	A Switch on the input breaker B Check the connection and re-do
3	No alarm but no output	Output connection problem	Check the connection and re-do
4	The UPS doesn't start after pressing On button	A pressing ON button time is insufficient B Overload	A Press and hold On button for 1s B Disconnect all loads and restart
5	AC indicator blinking	Input AC is beyond normal range	Pay attention to the backup time if the UPS is in battery mode
6	Abnormal backup time	A Battery not fully charged B Battery Bad	A Charge battery for 8 hours when AC is normal, then test the backup time again B Contact distributor to replace battery
7	Abnormal sound or smell	Fault inside UPS	shut down the UPS immediately and Contact distributor

Please provide the UPS model, SN when calling distributor for maintenance.

Appendix I USB communication port definition

Definition of Male port:

Pin 1 VCC , Pin 2 D-
pin 3 D+ , Pin 4 GND

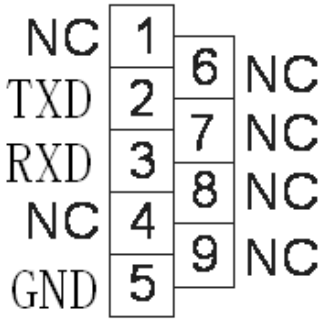
Application: use UPSilon2000 Power Management software

Available functions of the USB

- Monitor UPS power status
- Monitor UPS alarm info
- Monitor UPS running parameters
- Timing off/on setting

Appendix II RS232 communication port definition

Definition of Male port:



Connection between PC RS232 port and UPS RS232 port:

PC RS232 port	UPS RS232 port	
Pin 2	Pin 2	UPS send，PC receive
Pin 3	Pin 3	PC send，UPS receive
Pin 5	Pin 5	ground

Available function of RS232:

- ◆Monitor UPS power status.
- ◆Monitor UPS alarm info.
- ◆Monitor UPS running parameters.
- ◆Timing off/on setting.

RS-232 communication data format:

Baud rate ---------- 2400bps
Byte length ---------- 8bit
End bit ---------- 1bit
Parity check --------none

Appendix III Shipment list

Item	Description	Quantity	Unit
1	UPS	1	SET
2	<UPS User Manual>	1	PC
3	Drier	2（H1）	PC
4	Intelligent monitoring CD-ROM UPSILON2000	1	PC
5	Calibrate CD-ROM UPS Service	1	PC
6	USB cable	1	PC

Appendix Ⅳ Options

ITEM	NAME	DESCRIPTION	REMARK
1	Parallel board	Parallel function optional	
2	SNMP card	Remote monitoring UPS operating status	
3	Dry contact card		

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